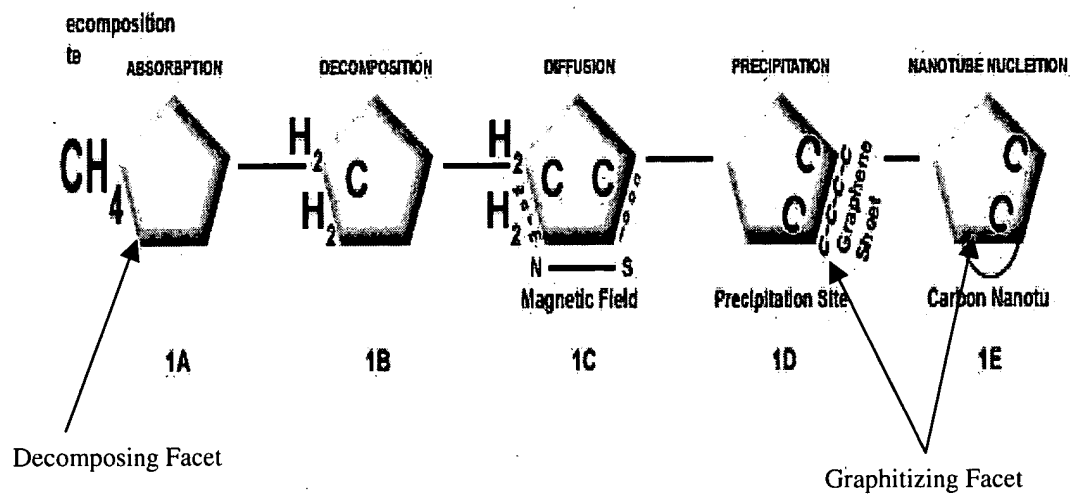


Figures 1A-1E



Figures 1F-1J

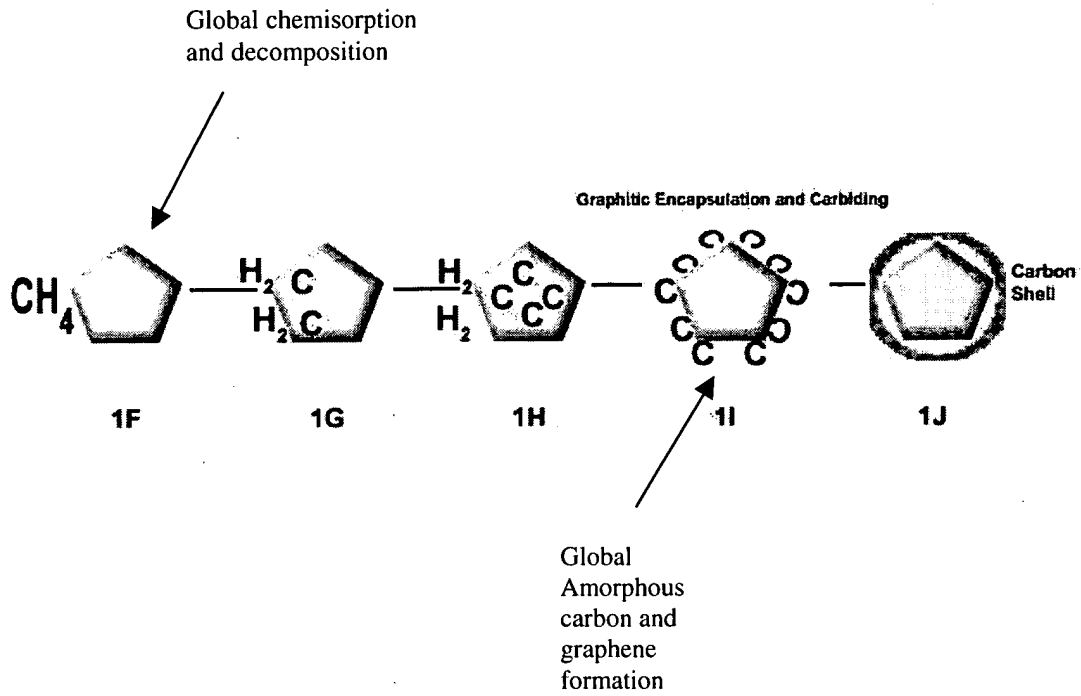


Figure 1F-1J

The diagram illustrates a CVD reactor setup for the synthesis of carbon nanotubes. The main components and their labels are as follows:

- Decomposition product outlet**: Located at the top left, indicating the exit point for byproducts.
- Quartz Reaction Vessel**: The central vertical chamber where the reaction takes place.
- Resistant heater**: A heating element surrounding the reaction vessel.
- Carbon Nanotube**: The product being synthesized, shown as a vertical tube within the reactor.
- Fe nanoparticle**: The catalyst used for synthesis, located at the base of the carbon nanotube.
- Superconducting Magnet**: A magnet positioned around the reactor to provide a magnetic field.
- Furnace**: The heating zone at the bottom of the reactor.
- Substrate Holder**: A holder for the substrate, located at the bottom of the reactor.
- Direction of External Magnetic Field**: Indicated by a downward arrow labeled **N** and **S**, showing the field is applied vertically.

66

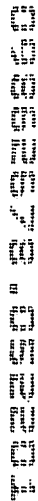
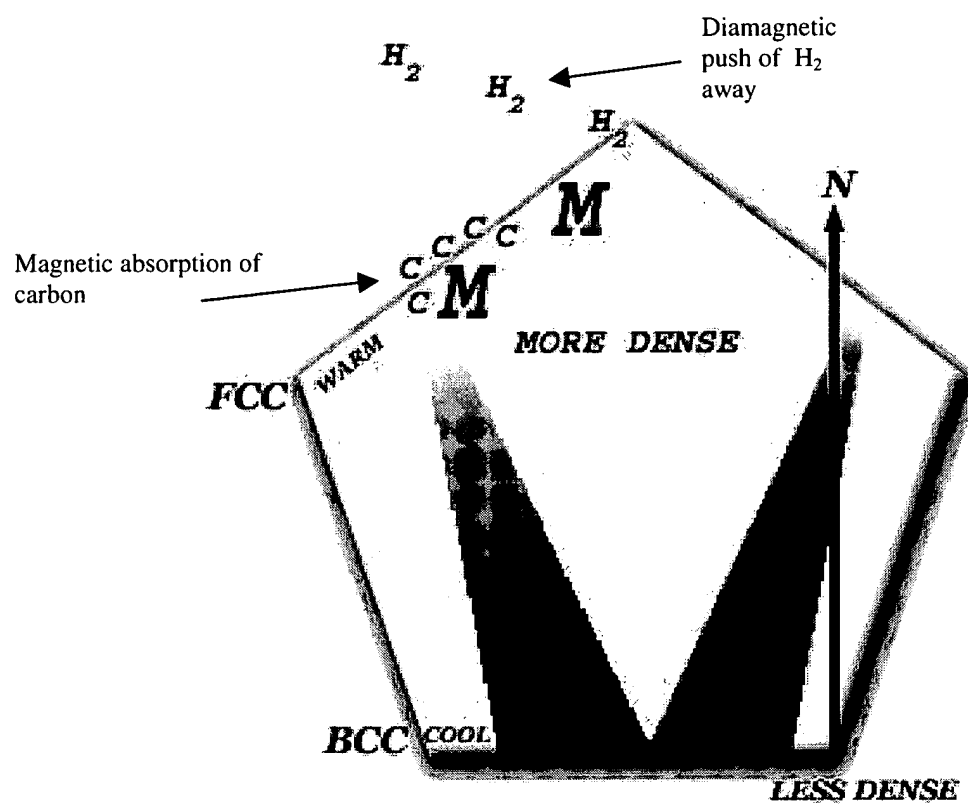
[illegible]

Figure 4



Γ

A diagram of a pentagon containing the chemical formula $C-M-C-M-C-M-C-M$. An arrow points from the top-left corner of the page to the second 'M' in the sequence.

110771 110781 110791 110801 110811 110821 110831 110841 110851 110861 110871 110881 110891 110901 110911 110921 110931 110941 110951 110961 110971 110981 110991 111001 111011 111021 111031 111041 111051 111061 111071 111081 111091 111101 111111 111121 111131 111141 111151 111161 111171 111181 111191 111201 111211 111221 111231 111241 111251 111261 111271 111281 111291 111301 111311 111321 111331 111341 111351 111361 111371 111381 111391 111401 111411 111421 111431 111441 111451 111461 111471 111481 111491 111501 111511 111521 111531 111541 111551 111561 111571 111581 111591 111601 111611 111621 111631 111641 111651 111661 111671 111681 111691 111701 111711 111721 111731 111741 111751 111761 111771 111781 111791 111801 111811 111821 111831 111841 111851 111861 111871 111881 111891 111901 111911 111921 111931 111941 111951 111961 111971 111981 111991 112001 112011 112021 112031 112041 112051 112061 112071 112081 112091 112101 112111 112121 112131 112141 112151 112161 112171 112181 112191 112201 112211 112221 112231 112241 112251 112261 112271 112281 112291 112301 112311 112321 112331 112341 112351 112361 112371 112381 112391 112401 112411 112421 112431 112441 112451 112461 112471 112481 112491 112501 112511 112521 112531 112541 112551 112561 112571 112581 112591 112601 112611 112621 112631 112641 112651 112661 112671 112681 112691 112701 112711 112721 112731 112741 112751 112761 112771 112781 112791 112801 112811 112821 112831 112841 112851 112861 112871 112881 112891 112901 112911 112921 112931 112941 112951 112961 112971 112981 112991 113001 113011 113021 113031 113041 113051 113061 113071 113081 113091 113101 113111 113121 113131 113141 113151 113161 113171 113181 113191 113201 113211 113221 113231 113241 113251 113261 113271 113281 113291 113301 113311 113321 113331 113341 113351 113361 113371 113381 113391 113401 113411 113421 113431 113441 113451 113461 113471 113481 113491 113501 113511 113521 113531 113541 113551 113561 113571 113581 113591 113601 113611 113621 113631 113641 113651 113661 113671 113681 113691 113701 113711 113721 113731 113741 113751 113761 113771 113781 113791 113801 113811 113821 113831 113841 113851 113861 113871 113881 113891 113901 113911 113921 113931 113941 113951 113961 113971 113981 113991 114001 114011 114021 114031 114041 114051 114061 114071 114081 114091 114101 114111 114121 114131 114141 114151 114161 114171 114181 114191 114201 114211 114221 114231 114241 114251 114261 114271 114281 114291 114301 114311 114321 114331 114341 114351 114361 114371 114381 114391 114401 114411 114421 114431 114441 114451 114461 114471 114481 114491 114501 114511 114521 114531 114541 114551 114561 114571 114581 114591 114601 114611 114621 114631 114641 114651 114661 114671 114681 114691 114701 114711 114721 114731 114741 114751 114761 114771 114781 114791 114801 114811 114821 114831 114841 114851 114861 114871 114881 114891 114901 114911 114921 114931 114941 114951 114961 114971 114981 114991 115001 115011 115021 115031 115041 115051 115061 115071 115081 115091 115101 115111 115121 115131 115141 115151 115161 115171 115181 115191 115201 115211 115221 115231 115241 115251 115261 115271 115281 115291 115301 115311 115321 115331 115341 115351 115361 115371 115381 115391 115401 115411 115421 115431 115441 115451 115461 115471 115481 115491 115501 115511 115521 115531 115541 115551 115561 115571 115581 115591 115601 115611 115621 115631 115641 115651 115661 115671 115681 115691 115701 115711 115721 115731 115741 115751 115761 115771 115781 115791 115801 115811 115821 115831 115841 115851 115861 115871 115881 115891 115901 115911 115921 115931 115941 115951 115961 115971 115981 115991 116001 116011 116021 116031 116041 116051 116061 116071 116081 116091 116101 116111 116121 116131 116141 116151 116161 116171 116181 116191 116201 116211 116221 116231 116241 116251 116261 116271 116281 116291 116301 116311 116321 116331 116341 116351 116361 116371 116381 116391 116401 116411 116421 116431 116441 116451 116461 116471 116481 116491 116501 116511 116521 116531 116541 116551 116561 116571 116581 116591 116601 116

Case B2 Unstable metal carbides Global surface graphitization

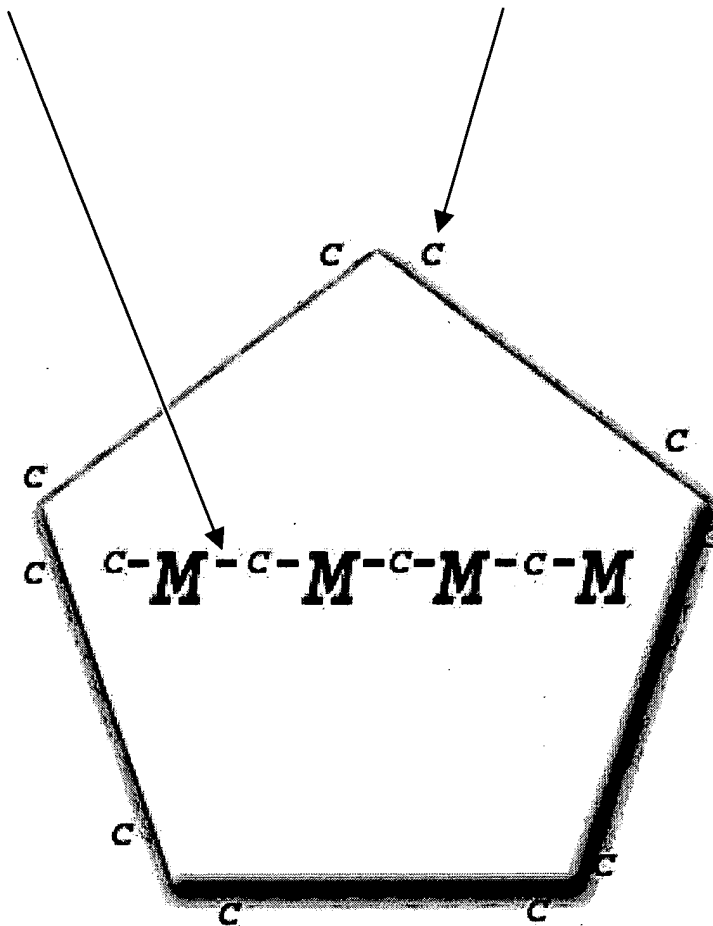
Global surface graphitization



Figure 8

Case B3 stable metal carbides

Global surface amorphous carbon



B3- Stable Metal Carbide

20250322000000

Figure 9

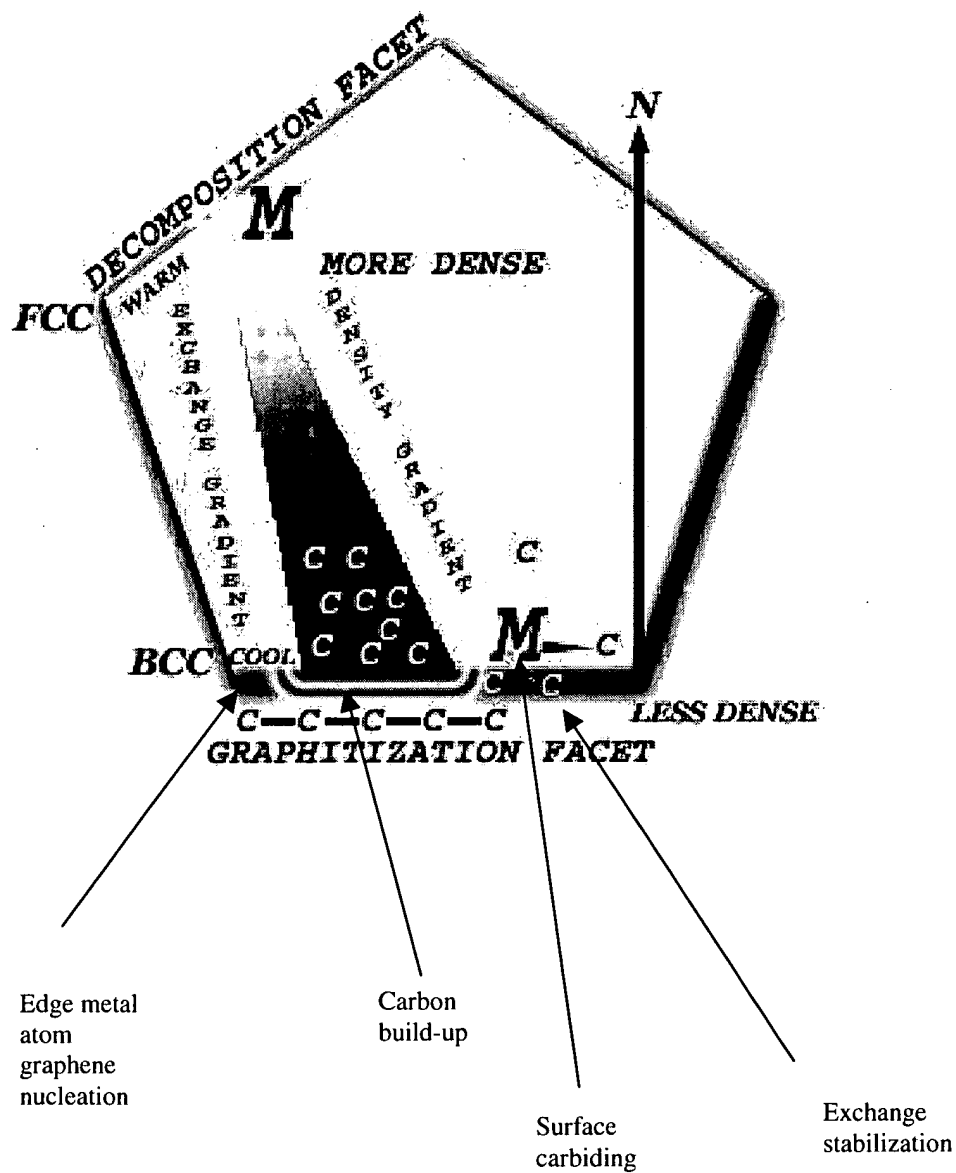


Figure 10

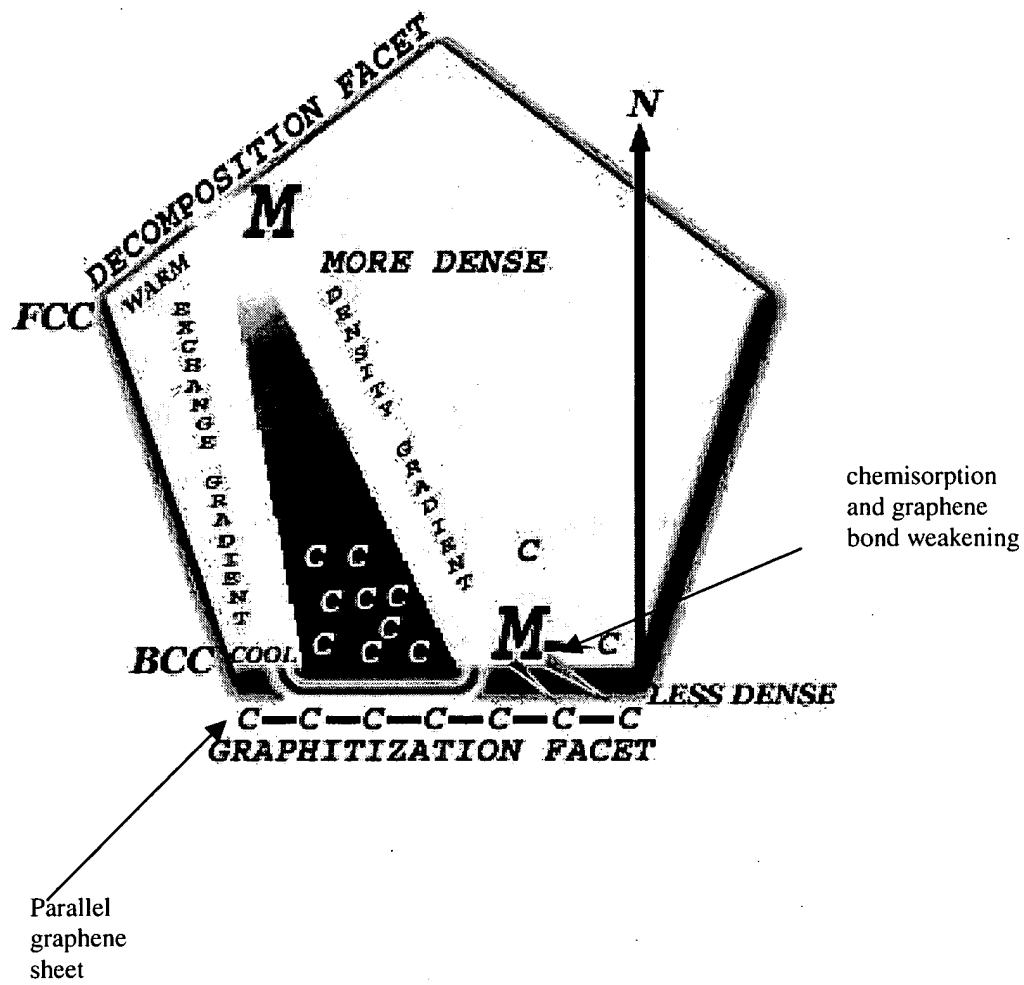


Figure 11

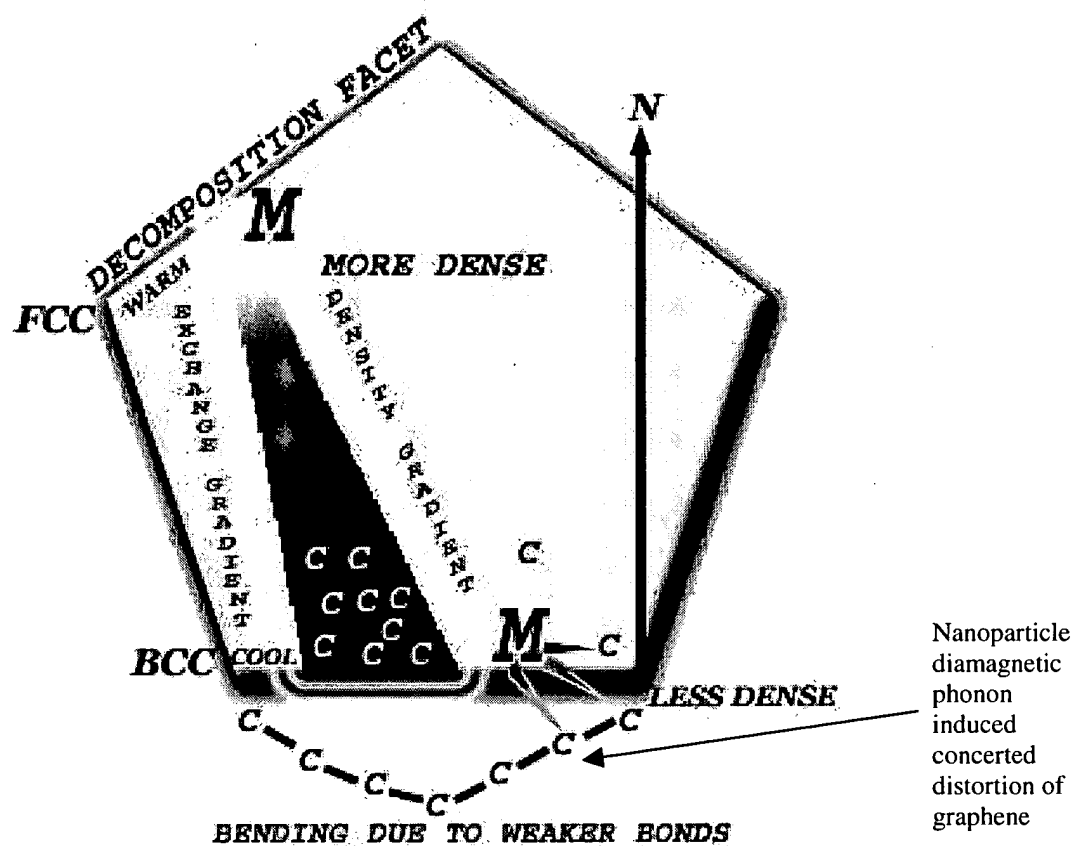


Figure 12

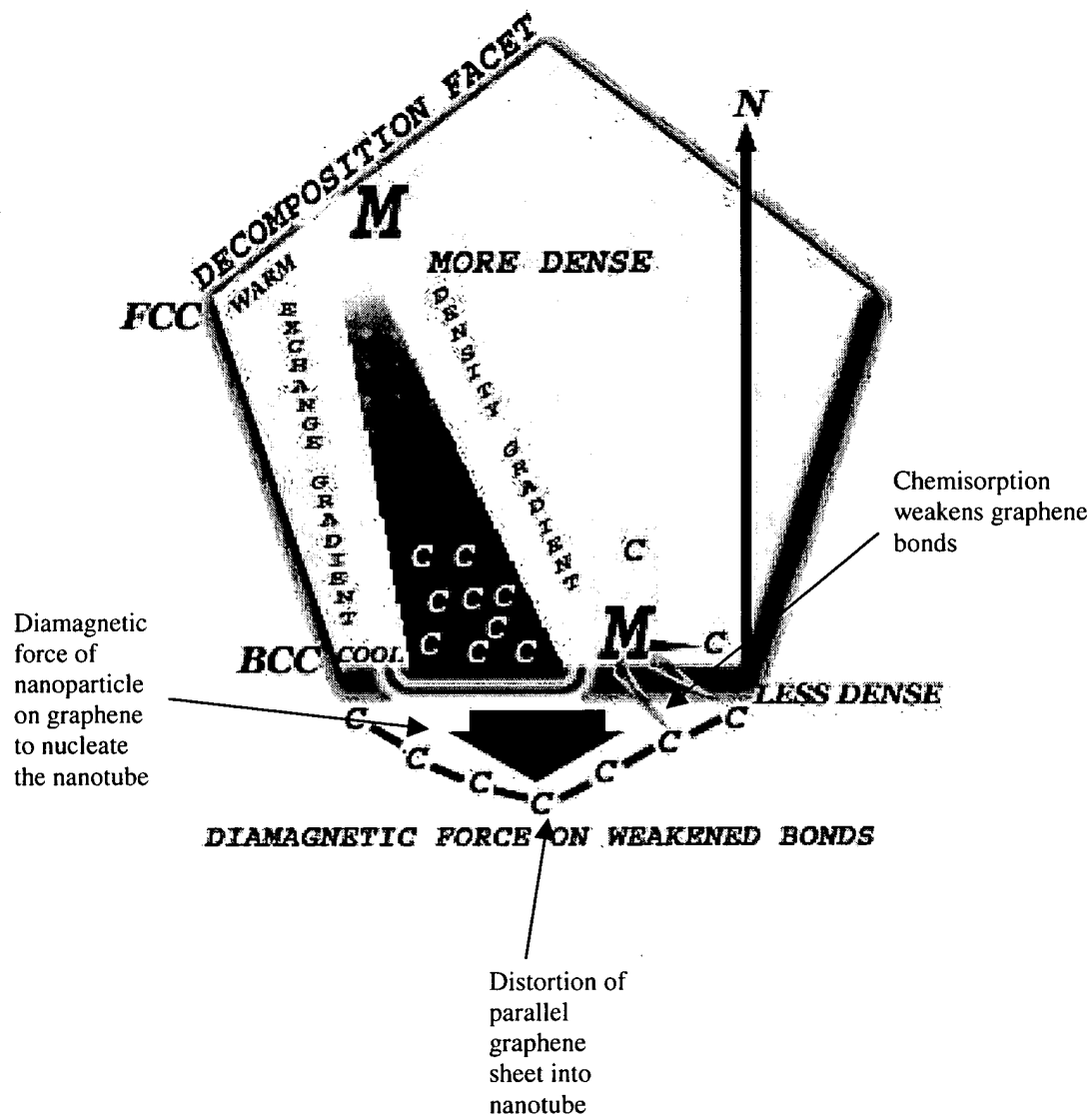


Figure 13

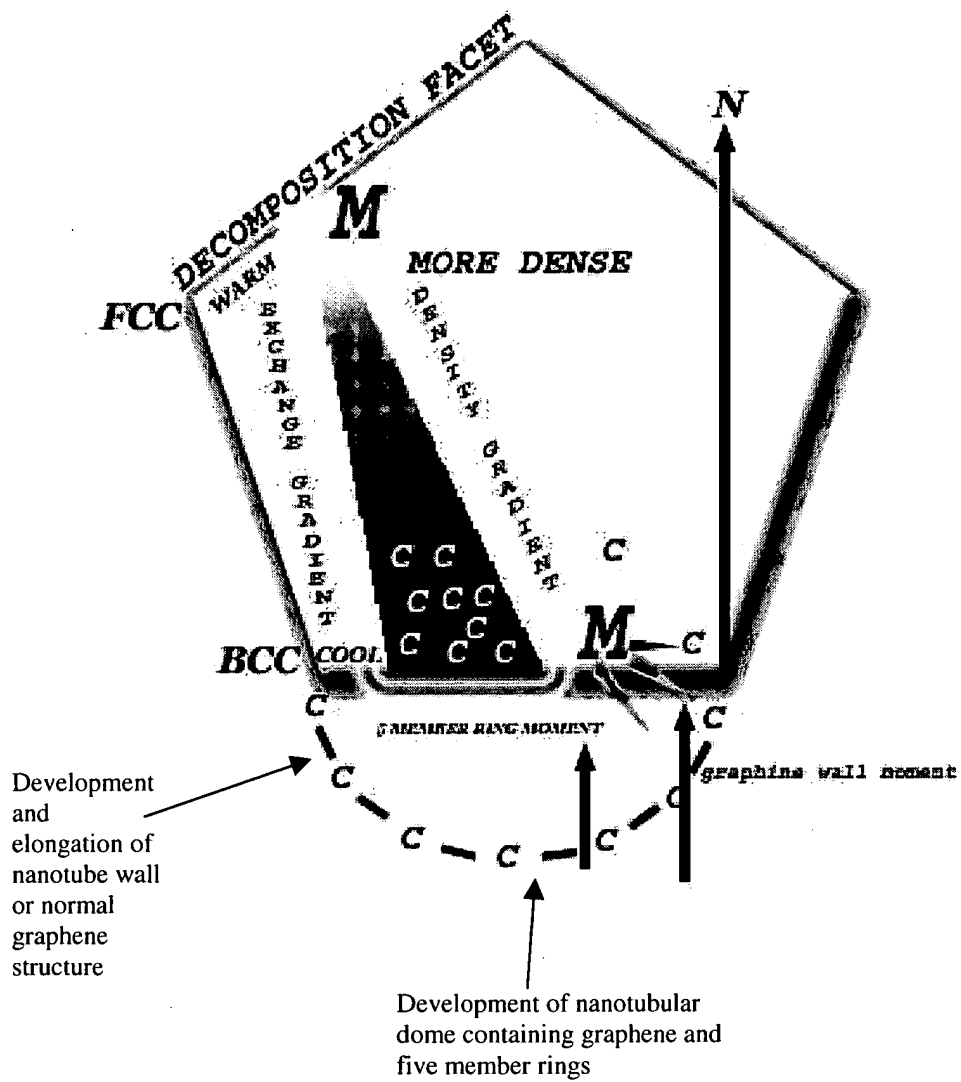


Figure 14

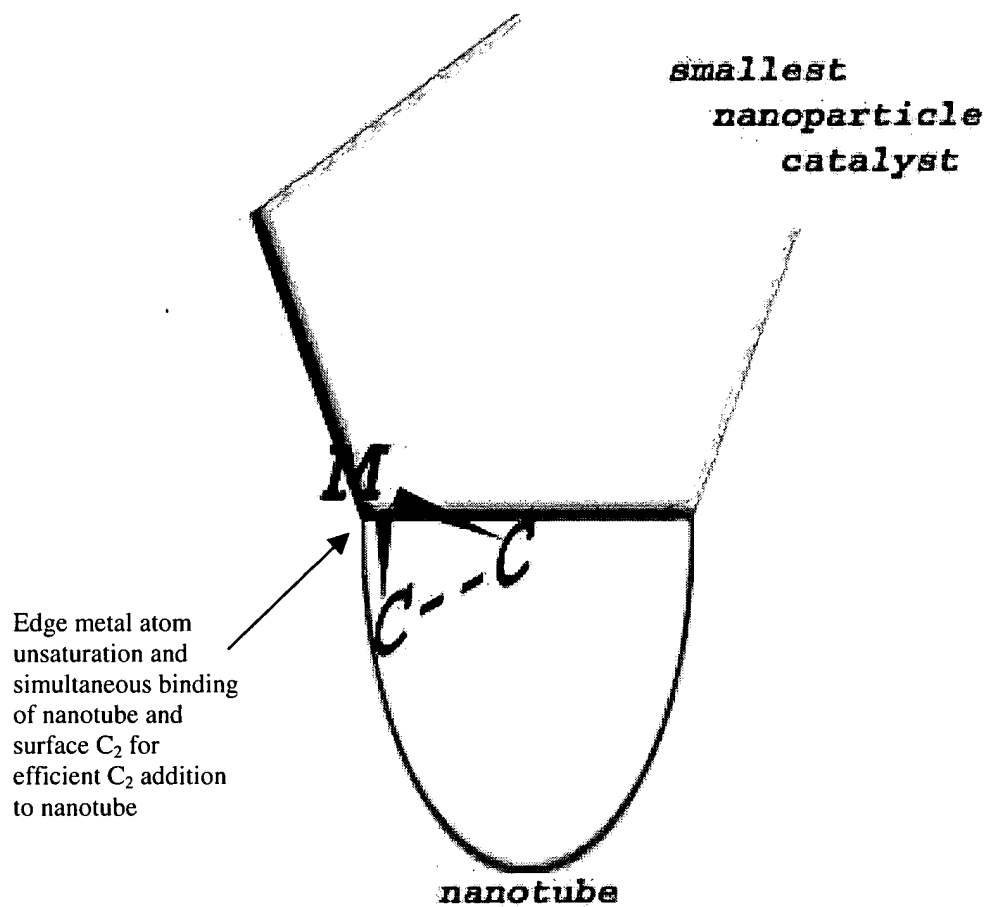


Figure 15

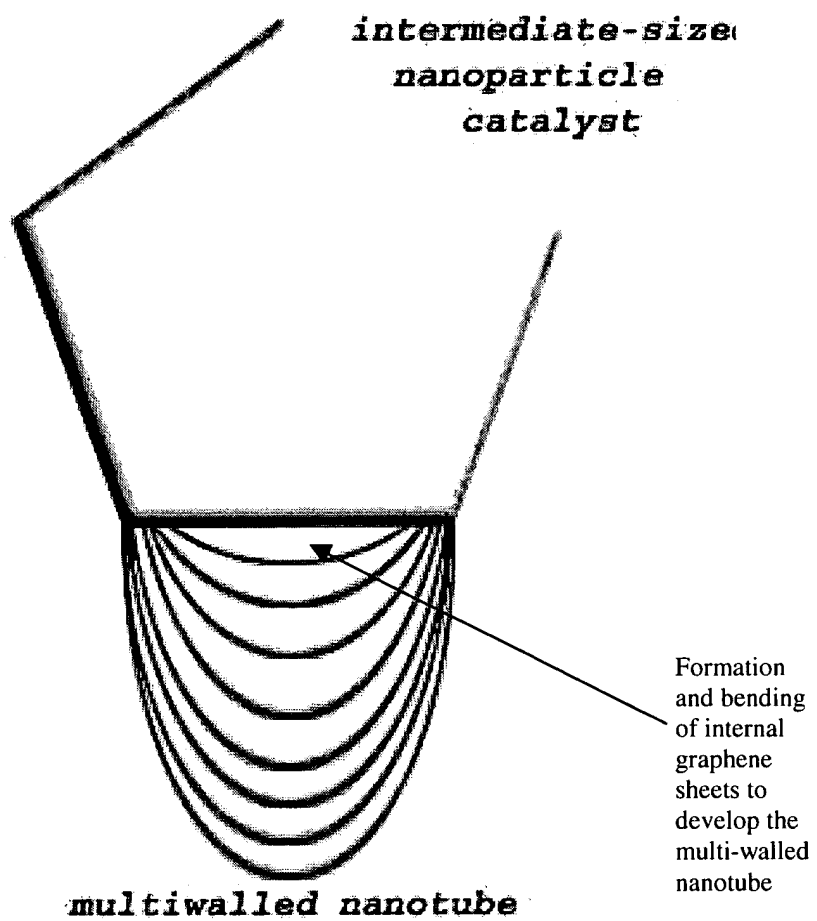


Figure 16

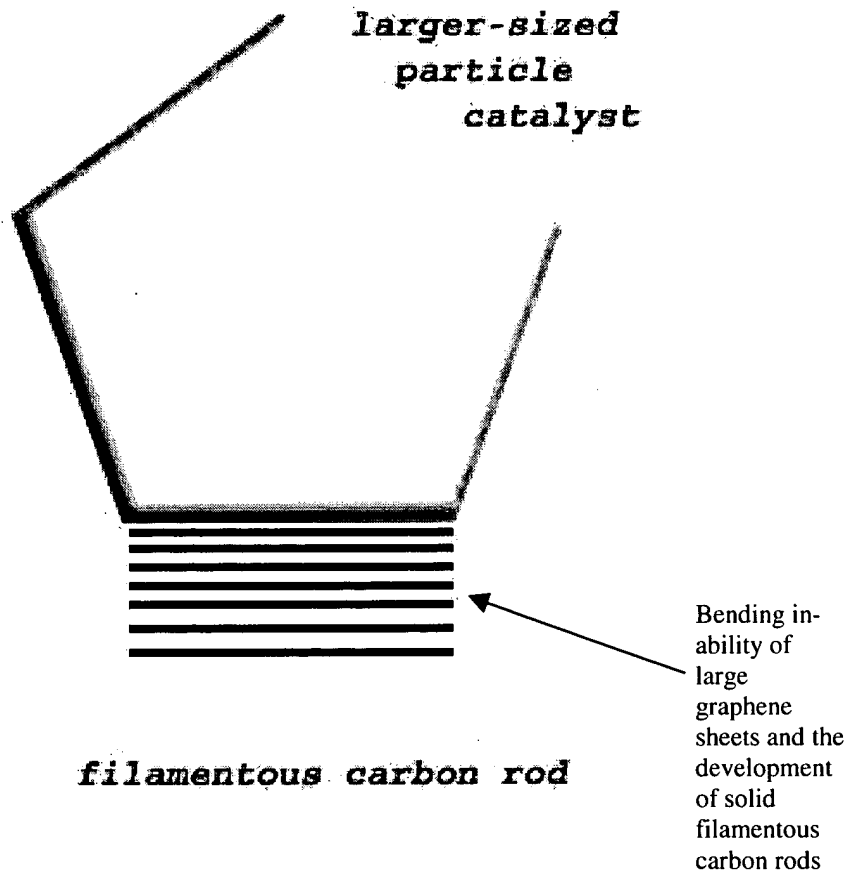
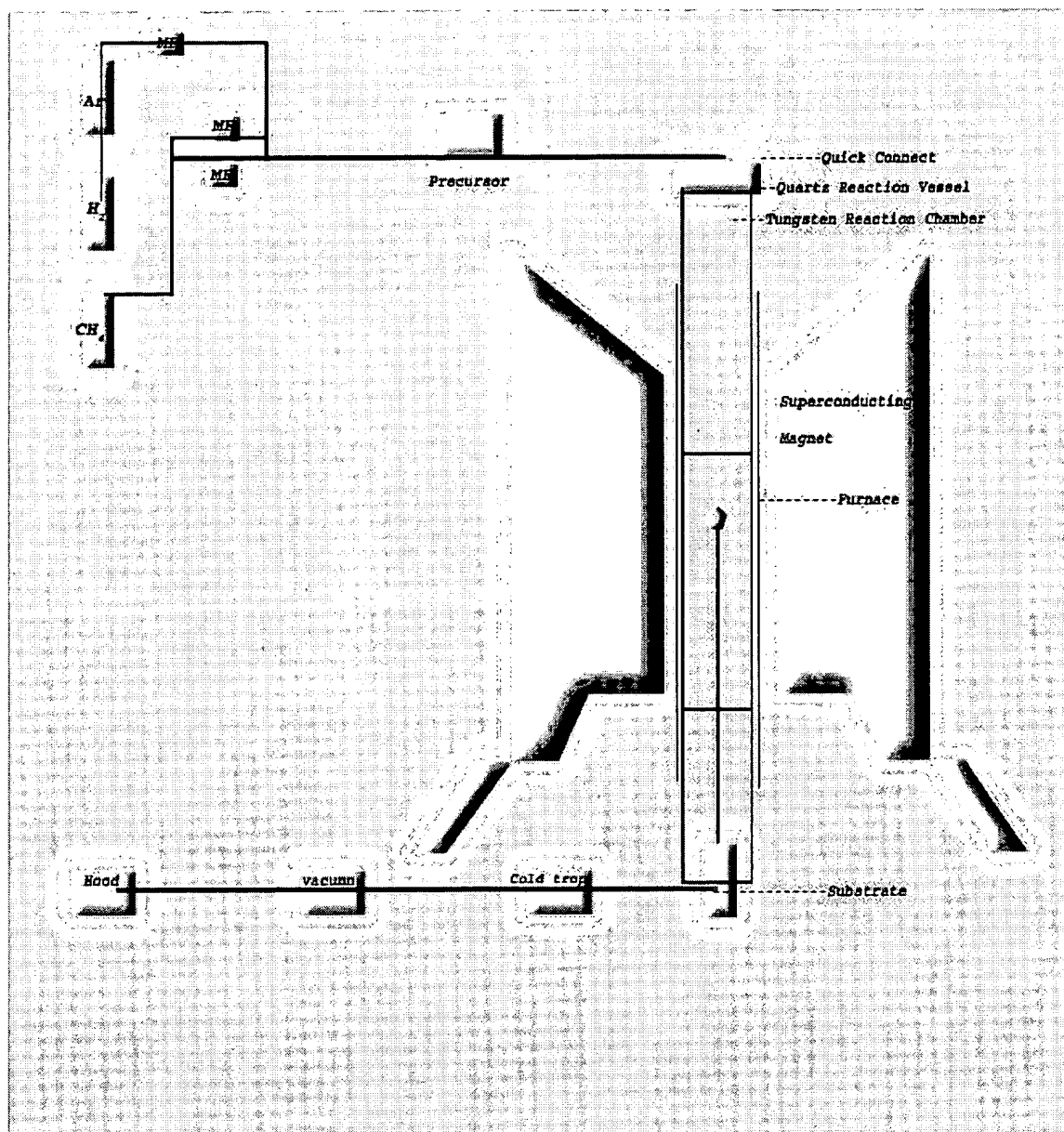


Figure 17 – Magneto Catalytic Chemical Vapor Deposition System



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Figure 18

